Adjustment disorders after severe life-events in four postconflict settings

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Keywords Adjustment disorders · Stress-related disorders · Psychopathology · Severe life events · Postconflict countries

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Introduction

In clinical practice the diagnosis of adjustment disorders (AD) is being widely used. AD are defined as maladaptive reactions to one or more identifiable psychosocial stressors (e.g. divorce, unemployment, migration). Consequently, AD can be regarded as a stress-response disorder [12, 14].

Whereas the symptom criteria for PTSD are quite clearly defined in ICD-10 as well as in DSM-IV, the operationalisation of conventional ICD- or DSM-defined AD remains very diffuse. The ICD-10 defines AD as "States of subjective distress and emotional disturbance" [25]. This definition is ill-defined, as it includes the broadest possible range of psychopathological symptoms [22]. Based on this definition it is possible to consider any psychopathological symptom as part of a syndrome that represents an AD, as long as the criteria of another ICD disorder are not met.

Based on a theoretical stress-response model, [14] proposed a new definition of AD. According to this,

predominant symptoms of AD are intrusion, avoidance, and failure to adapt [15]. The main difference between AD and PTSD in this new model is the non life-threatening nature of stressors for AD in contract to the traumatic (i.e., immediately life threatening) nature of the stressors for PTSD. The former type of stressors in turn differs from ordinary life events (e.g. marriage) in its capability to induce an AD.

The current study aims to investigate this concept in different samples from developing or crisis-stricken countries. Between 1997 and 1999 the Transcultural Psychosocial Organization, a World Health Organization (WHO) Collaborating Centre for Refugees and Ethnic Minorities, has conducted an epidemiological survey in four different low-income regions: East Africa (Ethiopia), North Africa (Algeria), the Middle East (Gaza), and Southeast Asia (Cambodia). In a series of studies trauma-related disorders were investigated [2, 4, 5, 7, 8, 10, 18, 19]. High frequencies of both traumatic and severe life-events are characteristic for a post-conflict setting, which can be defined as a setting with prolonged, multiple and changing threats.

In the Algerian sample the PTSD prevalence was highest with 37%. But in general, it was striking that in relation to the amount of experienced traumatic life-events, stress-related morbidity was comparably low. For example the prevalence of PTSD in the Gaza sample was 18% and in the Ethiopian sample 16%. When the risk factor 'armed-conflict-associated violence' (ACAV) is considered, the ranking of the PTSD prevalence of the four samples changes very much [8]. But the argument that in comparison to the high number of experienced traumatic life-events PTSD prevalences in the four samples are low stays untouched. Thus, based on the assumption that the enormous amount of experienced life stress in refugees may have presented additional morbidity to PTSD, the present paper explores whether severe life-events in the four countries caused (additional) prevalence of AD. In specific, the following research questions were to be answered:

- How many persons experienced life-events that may cause AD?
- What are the prevalences of AD in the four different samples if the new stress-response model of AD is applied?
- What are the comorbidities of AD with other disorders previously studied in the four samples [8, 9]?

Methods and procedures

Samples

Data from a comprehensive international study were used for secondary analyses. The four countries Ethiopia, Algeria, Gaza, and Cambodia were originally selected in accordance with the following criteria: (1) the presence of an intervention program for refugees, (2) absence of ongoing high-intensity conflicts and (3) availability of local staff and facilities to collect data. Details of the four populations' local contexts have been described for Ethiopia by Aptekar and Giel [3] and Araya et al. [4, 5], for Algeria, by Aït Sidhoum et al. [2], for Gaza by Qouta and El-Sarraj [20] and for Cambodia by Van de Put and Eisenbruch [23]. Multistep random sampling procedures were used to select representative samples in the countries. For this method, addresses of temporal housing were first selected from lists of resident addresses that had been obtained from local authorities. Then, one person was randomly selected from each selected address. The Algerian sample was randomly selected from the Gouvernorat d'Algiers. Of the 850 persons approached, 653 (76.7%) participated. In Cambodia, three areas were selected: Odambang I commune in Sangke District in the Battambang province, Veal Pong Commune in Udong District in the Kampong Speu province and Sang Kat Psar Doeum Kor in the capital, Phnom Penh. In Odambang I 98% of the 205 approached respondents participated, in Veal Pong Commune 96% of the 215 approached respondents participated, and in Sang Kat Psar Doeum Kor 81% of the 255 approached respondents participated. In Ethiopia, respondents were selected from the Kaliti and Koremeda temporary shelters in Addis Ababa with refugees from Eritrea. 1208 respondents were approached for participation. The response rate was 99%. In Gaza, three refugee camps, three cities, and two resettlement areas were randomly selected. 98% of the 600 approached persons participated in the study. More details about sampling and other procedures are described elsewhere [7–9].

Table 1 shows the basic characteristics of the samples. Other sociodemographic characteristics of the samples have been described in detail by de Jong et al. [7].

Assessments and diagnoses

Severe life events

Life events were assessed by an adapted version of the Life Events and Social History Interview (LESH; [16]. This structured interview covers several major life-domains that are sensitive to changes during the period of the displacement or flight of victims of organized violence (for more details see [7]. For the purpose of the present study, two types of events were differentiated: events more likely related to adjustment disorders (AD events, not immediately life-threatening, e.g. loss of property; see Table 3 for a list of events) and events more likely related to Posttraumatic Stress Disorders (PTSD events). Based on DSM-IV definition of life events that qualify for the PTSD diagnosis

Table 1 Description of the samples in Ethiopia, Algeria, Gaza, and Cambodia

	Ethiopia	Algeria	Gaza	Cambodia
Sample size (*n*)	1,200	653	585	610
Gender				
Male (%)	37.6	54.3	46.8	43.1
Female (%)	62.4	45.7	53.2	56.9
Age				
Range, years	16–60	17–99	16–60	16–65
Mean (SD) in years	33.9 (9.9)	40.6 (20.6)	31.6 (11.6)	36.3 (12.9)

(Criterion A), all events related to immediate life-threat or sudden confrontations with mortality were considered PTSD events (e.g. witnessing the death of a family member, being close to death, serious injury) as well as other DSM-IV specified traumatic events (sexual abuse, imprisonment, or torture).

Adjustment disorders

Adjustment disorders were diagnosed according to the stress-response model [14, 15]. AD is constituted by three symptom clusters: *Intrusions*, i.e., repeated involuntary and distressing memories related to the index events; *avoidance*, i.e., efforts to push away distressing memories or reminders, *and Failure to adapt*, i.e., a range of symptoms interfering with everyday functioning like difficulties concentrating or sleep disturbance.

The symptom indicators of AD had to be obtained from psychopathology measures previously introduced in the study of the four samples since no AD section (neither conventional nor new AD concept) is existent in the composite international diagnostic interview (CIDI). The available measures for symptoms were taken from the CIDI 2.1; section K (CIDI; [25]) and the structured interview for disorders of extreme stress (SIDES; [17]. Table 2 lists all AD symptom categories and single symptom indicators and their particular source. Note, that different to two previous papers [14, 15], the current study was unable to apply either a time criterion (symptom onset after the severe life-events) or a criterion for clinical severity as some of the items were taken from the SIDES interview, which does not address these criteria.

AD diagnostic algorithm: Following [15] AD cases had to meet the following criteria: Symptoms had to be in relation to one or more of the index events. Furthermore, at least one Intrusion symptom, one Avoidance symptom, and two or more Failure to adapt symptoms had to be present.

Other disorders

The additionally reported prevalences of other diagnoses of the samples (mood disorders, anxiety disorders, somatoform disorders, PTSD, and Disorders of Extreme Stress, Not Otherwise Specified [DESNOS]) were taken from previous reports of the samples [8, 9]. The subjects were assessed and diagnosed by the CIDI [25] and SIDES [17].

Statistical analyses

For all four regions, the number of subjects was determined that had experienced exclusively AD events (sub-group 1), exclusively PTSD events (sub-group 2) or both kind of life events (sub-group 3). In the subsequent analyses, only symptom frequencies for sub-groups 1 and 3 were calculated. Based on these frequencies, prevalences of AD and comorbid disorders were calculated for all four samples.

Table 2 Extraction of AD symptoms from available diagnostic interviews (CIDI and SIDES)

AD symptom categories and single symptom indicators	Source of criteria
Intrusions	
Did you keep remembering (EVENTS) even when you didn't want to?	CIDI, K23
After them, did you keep having bad dreams or nightmares about it?	CIDI, K24
Did you get very upset when you were reminded of them?	CIDI, K26
Avoidance	
Did you deliberately try not to think or talk about (EVENTS)?	CIDI, K33
Did you avoid places or people or activities that might have reminded you of them?	CIDI, K34
Failure to adapt	
After (EVENTS) did you have trouble sleeping?	CIDI, K28
After them, did you have difficulty concentrating?	CIDI, K30
After you experienced (EVENTS), did you have difficulty keeping track of time in your daily life?	SIDES, ES21
After you experienced (EVENTS), do you have the feeling that something is wrong with you that can never be fixed?	SIDES, ES26
After you experienced (EVENTS), do you have trouble trusting people?	SIDES, ES34

CIDI composite international diagnostic interview 2.1; section K; *SIDES* structured interview for disorders of extreme stress

All statistical analyses were performed with SPSS 15.0 for Windows.

Results

Severe life events

Table 3 shows the frequencies of AD-related life events. The Ethiopian sample had the highest number of subjects that had exclusively experienced AD events (48.6%). The Algerian sample, on the other hand, had only very few subjects (0.6%) that had exclusively experienced AD events (this leads to abstinence in symptom frequency calculation for the Algerian sample—see below Table 4). In all samples, the number of subjects that had experienced exclusively PTSD-related events was comparably low (0–27.5%) as previously reported [7].

If all AD index events were summed up (only AD-related events plus both events types; see Table 3), the frequencies were 53.7% in Gaza, 75.7% in Cambodia, 84.4% in Algeria, and 99.9% in Ethiopia. The distribution of particular AD events seems to reflect the living situation of the respective sample as reported in the single event categories, i.e., Ethiopian refugees reported mainly 'bad shelter conditions' in 100% and 'lack of food' in two-thirds of participants. The most frequently reported life event in the Gaza long-time refugee camps was 'bad shelter conditions' in 32%. In the Algerian sample almost two-thirds reported 'forced social isolation' and 'illness of a family member'. In the Cambodian sample the most frequently reported event was again 'lack of food' in 41%.

Table 3 Frequencies of severe life event in the four samples

	Ethiopia		Algeria		Gaza		Cambodia	
	n	%	*n*	%	*n*	%	*n*	%
General life-event categories								
AD-related life events only	583	48.6	4	0.6	46	7.9	53	8.7
PTSD-related life events only	0	0.0	97	14.9	161	27.5	62	10.2
Both event types	616	51.3	547	83.8	268	45.8	409	67.0
None of these events	1	0.1	5	0.8	110	18.8	86	14.1
Specific life-event categories								
Lack of food	826	68.8	152	23.3	25	4.3	251	41.1
Loss of property	802	66.8	123	18.8	68	11.6	–[a]	–
Lost house	240	20.0	45	6.9	24	4.1	–	–
Lost livestock	32	2.7	5	0.8	2	0.3	–	–
Lost personal belongings	755	62.9	55	8.4	20	3.4	–	–
Lost employment	197	16.4	34	5.2	8	1.4	–	–
Lost firm/shop/factory	39	3.3	19	2.9	5	0.9	–	–
Lost stocks	15	1.3	14	2.1	2	0.3	–	–
Lost cars	2	0.2	10	1.5	8	1.4	–	–
Lost land	12	1.0	12	1.8	7	1.2	–	–
Lack of shelter	632	52.7	104	15.9	12	2.1	234	38.4
Forced social isolation	84	7.0	398	60.9	22	3.8	75	12.3
Forced separation of family	99	8.3	67	10.3	31	5.3	209	34.3
Daily hassles							197	32.3
unable to pay rent	0	0.0	92	14.1	113	19.3	–[a]	–
No money for food	0	0.0	159	24.3	91	15.6	–	–
Illness	0	0.0	246	37.7	94	16.1	–	–
Illness family member	190	15.8	331	50.7	158	27.0	–	–
Crime victim	72	6.0	27	4.1	4	0.7	–	–
Death of significant person	178	14.8	126	19.3	77	13.2	–	–
Loss of refugee benefits	903	75.3	24	3.7	52	8.9	–	–
Loss of medical care	488	40.7	38	5.8	32	5.5	–	–
Bad shelter conditions	1,199	99.9	265	40.6	184	31.5	–[a]	–

[a] Not assessed

Table 4 Symptom-frequencies of adjustment disorders in two sub-groups of the four samples

	Ethiopia		Algeria		Gaza		Cambodia	
	AD-related events $n = 583$	AD- & PTSD-related events $n = 616$	AD-related events[a] $n = 4$	AD- & PTSD-related events $n = 547$	AD-related events $n = 46$	AD- & PTSD-related events $n = 268$	AD-related events $n = 53$	AD- & PTSD-related events $n = 409$
Intrusions								
Undeliberate remembering (K23)	78 (13.4%)	191 (31.0%)	2	394 (72.0%)	10 (21.7%)	177 (66.0%)	20 (37.7%)	309 (75.6%)
Nightmares (K24)	40 (6.9%)	149 (24.2%)	1	291 (53.2%)	6 (13.0%)	104 (38.8%)	4 (7.5%)	173 (42.3%)
Upset when reminded (K26)	63 (10.8%)	118 (19.2%)	1	347 (63.4%)	7 (15.2%)	138 (51.5%)	28 (52.8%)	310 (75.8%)
Avoidance								
Thought avoidance (K33)	46 (7.9%)	96 (15.6%)	1	288 (52.7%)	7 (15.2%)	103 (38.4%)	13 (24.5%)	196 (47.9%)
Avoid people, places (K34)	25 (4.3%)	48 (7.8%)	1	244 (44.6%)	6 (13.0%)	83 (31.0%)	7 (13.2%)	139 (34.0%)
Failure to adapt								
Trouble sleeping (K28)	60 (10.3%)	95 (15.4%)	2	401 (73.3%)	7 (15.2%)	137 (51.1%)	18 (34.0%)	260 (63.6%)
Difficulty concentrating (K30)	47 (8.1%)	73 (11.9%)	1	297 (54.3%)	5 (10.9%)	105 (39.2%)	16 (30.2%)	244 (59.7%)
Hard to keep track of time (ES21)	40 (6.9%)	72 (11.7%)	1	181 (33.1%)	5 (10.9%)	53 (19.8%)	7 (13.2%)	103 (25.2%)
Something is wrong (ES26)	30 (5.2%)	80 (13.0%)	1	94 (17.2%)	1 (2.2%)	55 (20.5%)	3 (5.7%)	70 (17.1%)
Trouble trusting people (ES34)	85 (14.6%)	200 (32.5%)	2	326 (59.6%)	6 (13.0%)	83 (31.0%)	10 (18.9%)	160 (39.1%)
Symptom categories								
Intrusions (at least 1)	119 (20.3%)	251 (40.8%)	2	435 (79.6%)	10 (21.7%)	192 (71.6%)	30 (56.6%)	340 (83.1%)
Avoidance (at least 1)	60 (10.3%)	110 (17.8%)	1	324 (59.2%)	8 (17.4%)	125 (46.7%)	14 (16.3%)	230 (56.3%)
Failure to adapt (at least 2)	64 (11.0%)	142 (22.9%)	2	379 (69.3%)	7 (15.2%)	132 (49.3%)	16 (30.2%)	247 (60.4%)
AD frequencies per sub-group	18 (3.1%)	50 (8.1%)	1	262 (47.9%)	6 (13.0%)	88 (32.8%)	11 (20.8%)	176 (43.0%)

[a] Frequencies not calculated due to very small size of this sub-group

AD symptoms, AD diagnoses, and comorbidities

Table 4 shows the frequencies of single symptoms and AD diagnoses for the subgroups with AD index events. Note that respective AD-related events sub-groups give best estimates of a pure AD diagnosis. Combined AD and PTSD-related events subgroups served as complement. In the following paragraph, data on the pure AD events groups were first compared across countries.

The most common intrusion symptom was "undeliberate remembering" with 38% in Cambodia, 21% in Gaza, and 13% in Ethiopia. The most prominent avoidance symptom was "thought avoidance" (7.9–24.5%). The failure to adapt symptom with the highest frequency was "trouble trusting people" with 19% in Cambodia, 15% in Ethiopia, and 13% in Gaza.

When symptom categories across the different samples (AD events sub-groups) are tested, intrusions were more common in Cambodia compared to Ethiopia or to Gaza [$\chi^2(1,N = 1{,}810) = 39.7$; $\chi^2(1,N = 1{,}195) = 12.4$, $P < 0.01$]. Symptoms of Failure to Adapt and Avoidance were more common in Cambodia than in Ethiopia ($\chi^2(1,N = 1{,}810) = 16.3$; 15.2, $P < 0.01$). There was no significant difference in the distribution of these symptoms, when comparing Cambodia with Gaza or Gaza with Ethiopia.

AD were less common in Ethiopia than in Cambodia and Gaza in the pure AD events subgroups as well as in the combined AD and PTSD events sub-groups ($\chi^2(1,N = 1{,}810) = 34.8$; $\chi^2(1,N = 1{,}785) = 11.5$, $P < 0.01$). For the combined *AD and PTSD event* sub-groups it is observed that AD were almost equally distributed in Algeria, Gaza, and Cambodia.

Table 5 shows the comprehensive prevalence rates of AD in the four total samples based on all study participants (i.e., including persons without AD-related events). Algeria (40%) had the highest prevalence of AD followed by Cambodia (31%). Ethiopia, (6%) on the other hand, had the lowest prevalence of AD. For country-wise comparisons similar patterns emerged as for data from Table 4 (see previous paragraph).

Finally, comorbidities with previously reported Axis-1 disorders were calculated. In all samples the highest rate of comorbidity was the one between AD and PTSD.

The second highest comorbidity rates were between AD and anxiety disorders followed by mood disorders. Somatoform Disorders were the rarest comorbid disorder of AD in Algeria, Gaza, and Cambodia.

Table 5 Prevalence and comorbidity patterns of adjustment disorders in the four total samples (in %)

	Ethiopia $n = 1{,}200$	Algeria $n = 653$	Gaza $n = 585$	Cambodia $n = 610$
Adjustment disorder (AD)	5.7	40.3	16.1	30.7
Comorbid with				
Mood disorder	11.8	34.2	25.5	22.5
Anxiety disorder	17.6	48.3	26.6	55.6
Somatoform disorder	4.4	16.0	16.0	3.7
PTSD	52.9	70.3	67.0	66.3
Previously reported other prevalences				
Mood disorder	5.2	22.7	9.4	11.5
Anxiety disorder	9.6	37.2	13.5	40.0
Somatoform disorder	2.7	8.3	5.3	1.6
PTSD	15.8	37.4	17.8	28.4
DESNOS	2.2	13.2	5.6	–
Any of the above disorders[a]	23.6	60.5	29.1	53.4

[a] Without DESNOS

Discussion

The present study has three main findings according to its main research questions. First, in all four samples the great majority of the subjects had experienced one or more AD-related life events. Second, the calculated estimates of AD suggest that in all four samples some of these subjects could be identified as having the signs of an AD (6–40%). Third, in all four samples the highest rates of comorbidity were between AD and PTSD followed by the comorbidity rate between AD and anxiety disorders.

Regarding the experience of AD-related life events, in all samples 46–84% of the examined subjects experienced such events. Most common event categories across samples were 'lack of food', 'bad shelter conditions', and 'forced social isolation'. If, for methodological purposes of homogeneity, all cases with additional DSM-according traumatic life events were excluded, frequencies were much smaller (1% in Algeria to 49% in Ethiopia). In all samples, the majority of subjects that had experienced at least one AD-related event also had experienced at least one PTSD-related event. This is not surprising, as the rate of traumatic life-events in post-conflict regions is generally high.

The second goal was to investigate the prevalence of AD following the new diagnostic AD concept by [14, 15]. Total AD prevalences including pure AD and PTSD-comorbid sub-groups varied from 6% in Ethiopia to 40% in Algeria. Most common symptoms (in subgroups with exclusively AD-related events) were intrusions (20–57%), followed by failure to adapt symptoms (11–30%), and avoidance (10–17%). The results of the present investigation are not beyond the ranges of AD prevalence as found in studies on the new AD concept in patients after cardiological surgery [14], psychosomatic patients [6], and a

community study of elderly [15]. Based on these findings it can be assumed that the new concept of AD is a valid and useful construct for the psychiatric diagnosis of AD.

The differences in the AD prevalences across the four samples are consistent with the findings from [8]. These authors found that in Algeria and Cambodia the ratio between subjects with PTSD not related to those with PTSD related to ACAV was lower, compared to Ethiopia and Gaza. Whereas people in latter countries suffered more directly from armed conflicts [8], people in Algeria and Cambodia in the current analyses show more disturbances due to other kinds of hardships and distresses. AD are traditionally seen as associated with exactly these other types of stressors of hardships and affections.

The third main finding was the high rate of comorbidity between AD and PTSD. About 53–70% of the AD cases showed a comorbid PTSD. When interpreting this finding, the following should be considered: First, due to the high numbers of traumatic life events experienced by the refugees this finding is to be expected [13]. Consequently, the previous analyses of symptoms and symptom groups (Table 4) distinguish between subgroups that suffered AD events only or in combination with PTSD-related events.

Second, a more basic reason for AD and PTSD comorbidity may be the high symptom overlap between these two disorders. In the stress-response model both disorders share intrusive and avoidance symptoms [1, 21]. In addition, AD contains 'failure to adapt' symptoms like time management problems or belief in one's own failure. For reasons of the secondary data analyses approach of the current study, some single symptom criteria served for diagnosing AD as well as PTSD (the latter in pervious publications, e.g., [7]. Other studies with separate assessments of AD or PTSD [6, 15] indicate that AD-PTSD comorbidities are still existent in a range of 20–30% of cases. The latter interpretation is based on the assumption that mental disorders like AD and PTSD are distinct categories. The dimensional understanding of mental disorders leads to another interpretation. According to this view the high comorbidity rate between AD and PTSD can be interpreted as a strong indication that AD and PTSD are parts of one and the same overall dimension of stress responses or stress-response spectrum (PTSD spectrum). This idea was first delineated by Horowitz [12], who proposed that AD, PTSD, acute stress disorder (ASD), and complicated grief belong to the same group of stress response syndromes. Third, it should be pointed out that the occurrence of high rates of comorbidity is not unusual for mental disorders. Wittchen and Jacoby [24] showed that almost all examined psychiatric disorders had substantial comorbidity rates (cf. [11]).

The findings of the present study have several limitations. In all samples, participants reported potential AD and PTSD events at the same time. This could be due to the fact that in all examined countries high-intensity conflicts had taken place. Thus, the number of participants that had exclusively experienced AD-related events was low. On the other hand these low frequencies could be due to the focus on PTSD of the epidemiological study, which the present study is based on. In future studies on the new concept of AD in refugee settings, it would be preferable to do more in-depth assessments of life-events in general and in particular of AD-related life-events.

A second limitation of the present study is given by the procedure to estimate the frequencies of the AD-symptoms and the AD-prevalences. The AD concept by Maercker et al. [14] is based on the factor analysis of empirical data gained with a criteria set that consists of 29 symptoms. The sub-scales of this assessment consist of five to seven symptoms, which are assessed with 7-point Likert scales. The AD diagnosis of the present study, on the other hand, is a rough estimate for exploratory purposes, which by definition does not claim to satisfy the same methodological requirements as the concept it is based on. It was generated with fewer symptoms, which were all assessed on dichotomous scales (as it is common for the most of the well established symptom checklists). Future studies on the new AD concept should be done either with the already existing questionnaire for AD by Maercker et al. [14] or with an equivalent alternative. This procedure would then make it possible to further evaluate the construct validity of the new AD concept using instance confirmatory factor analysis. Moreover, it is important that future studies incorporate severity, clinical significance, and time frame measures, which in the present study could not be considered. Finally, the limitation of the assumption that the high comorbidity rates between PTSD and AD are indicating that these disorders are parts of the same overall dimension of stress responses has to be pointed out. This assumption is in fact a hypothesis that still has to be tested by showing that different stress-response syndromes like AD or PTSD have a common core of symptoms.

Finally, it can be stated that the comparison of the AD-prevalences with the prevalences of the other disorders, which had been examined in the four samples [8, 9], showed that the size of the AD-prevalences was always in between rare disorders or research diagnoses (somatoform disorders, DESNOS) and more frequent disorders (PTSD and partially anxiety disorders). Although the results of the present study are exploratory by their nature, they show that the new concept of AD as a stress-response syndrome can be of great use for epidemiological research, particularly in refugee or migration settings. In addition, the

results suggest that the AD diagnosis may clinically be highly relevant and therefore much more research should be considered for this topic.

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